



Objectivity/DB Benchmarks

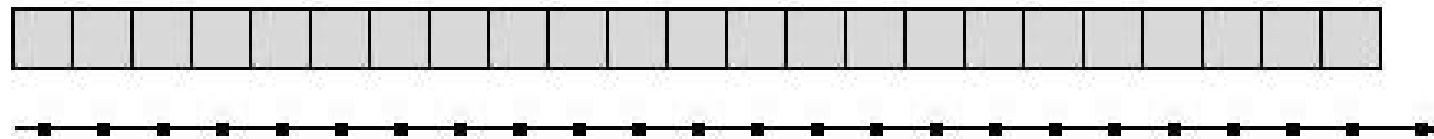
- ◆ **Sequential Reading/Writing**
- ◆ **Selective Reading**
- ◆ **Storage Overhead**
 - all benchmarks done with Objy 5.0

- ◆ **Slides and Note**
 - <http://home.cern.ch/s/schaller/www/Notes/Notes.html>

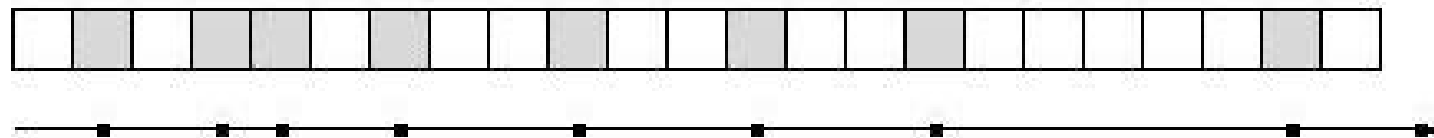


Access Patterns

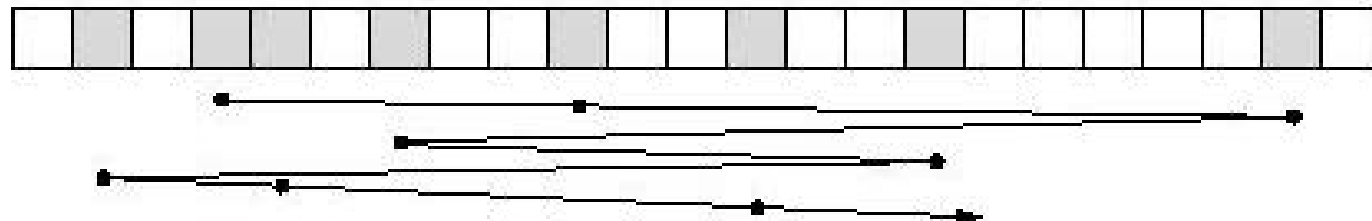
sequential
reading



selective
reading



random
access

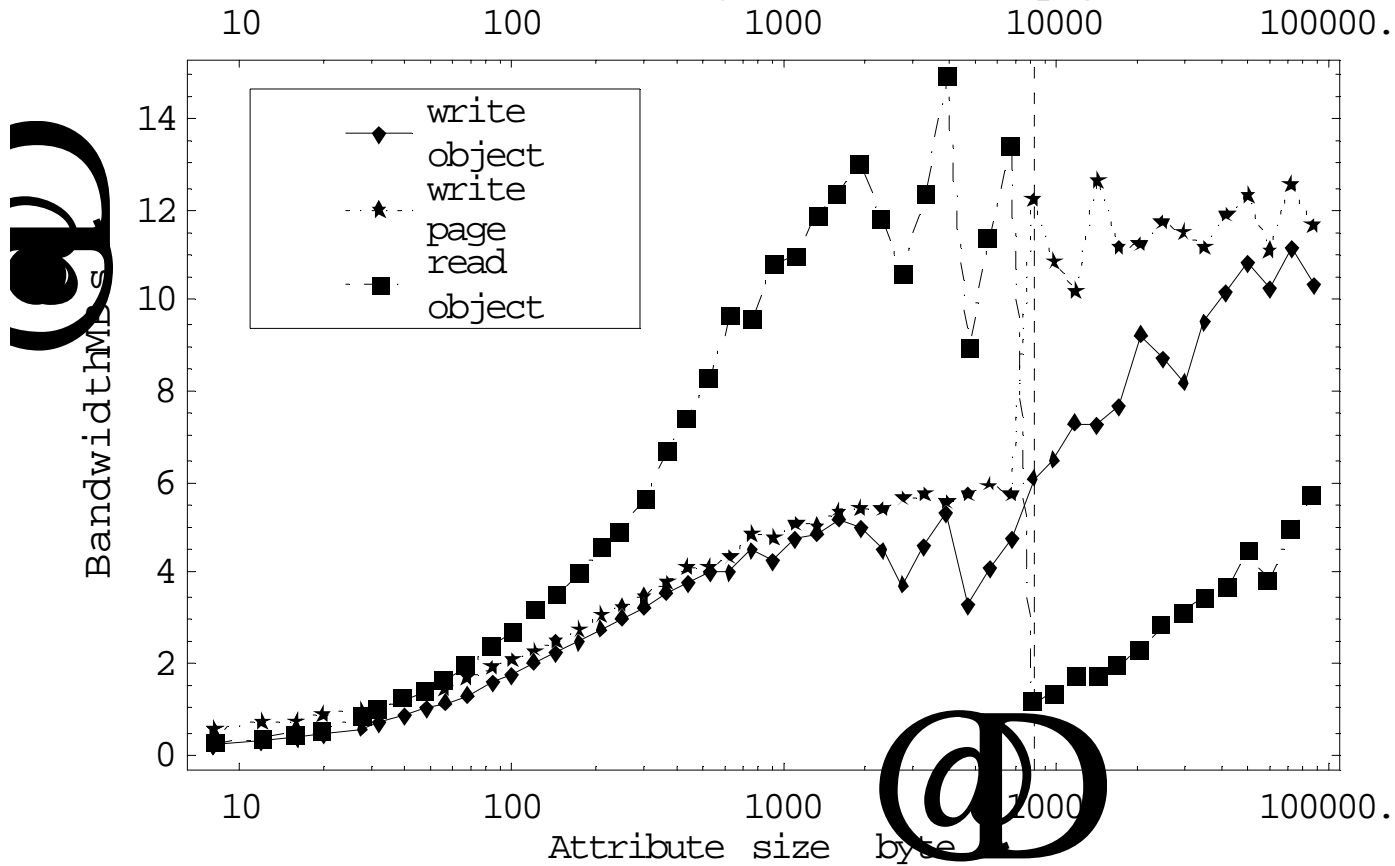




Sequential Read/Write, Solaris

Ultra-5_10, 270 MHz, Seagate Elite Hard Disk

Bandwidth vs. object size, 8 KB pages



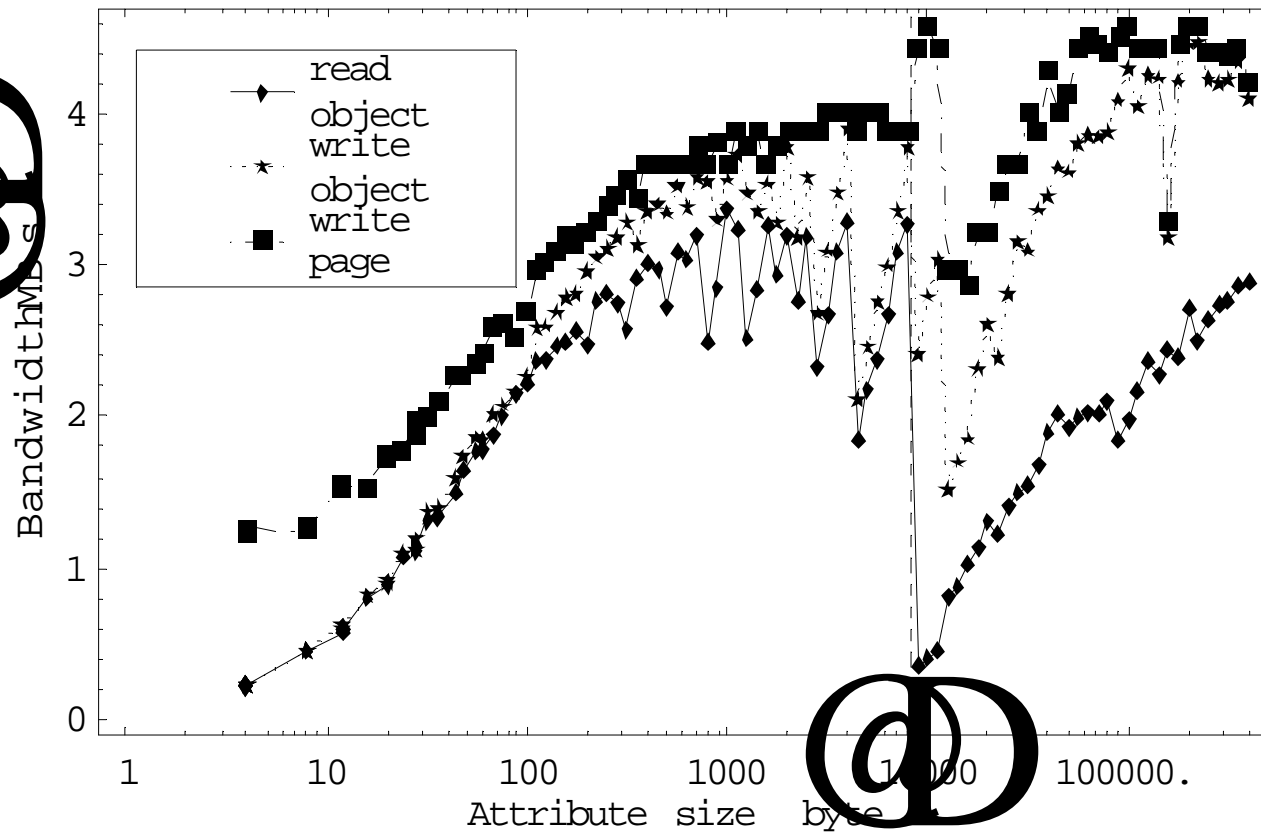


Sequential Read/Write, NT

PII/233 Mhz, Quantum hard disk

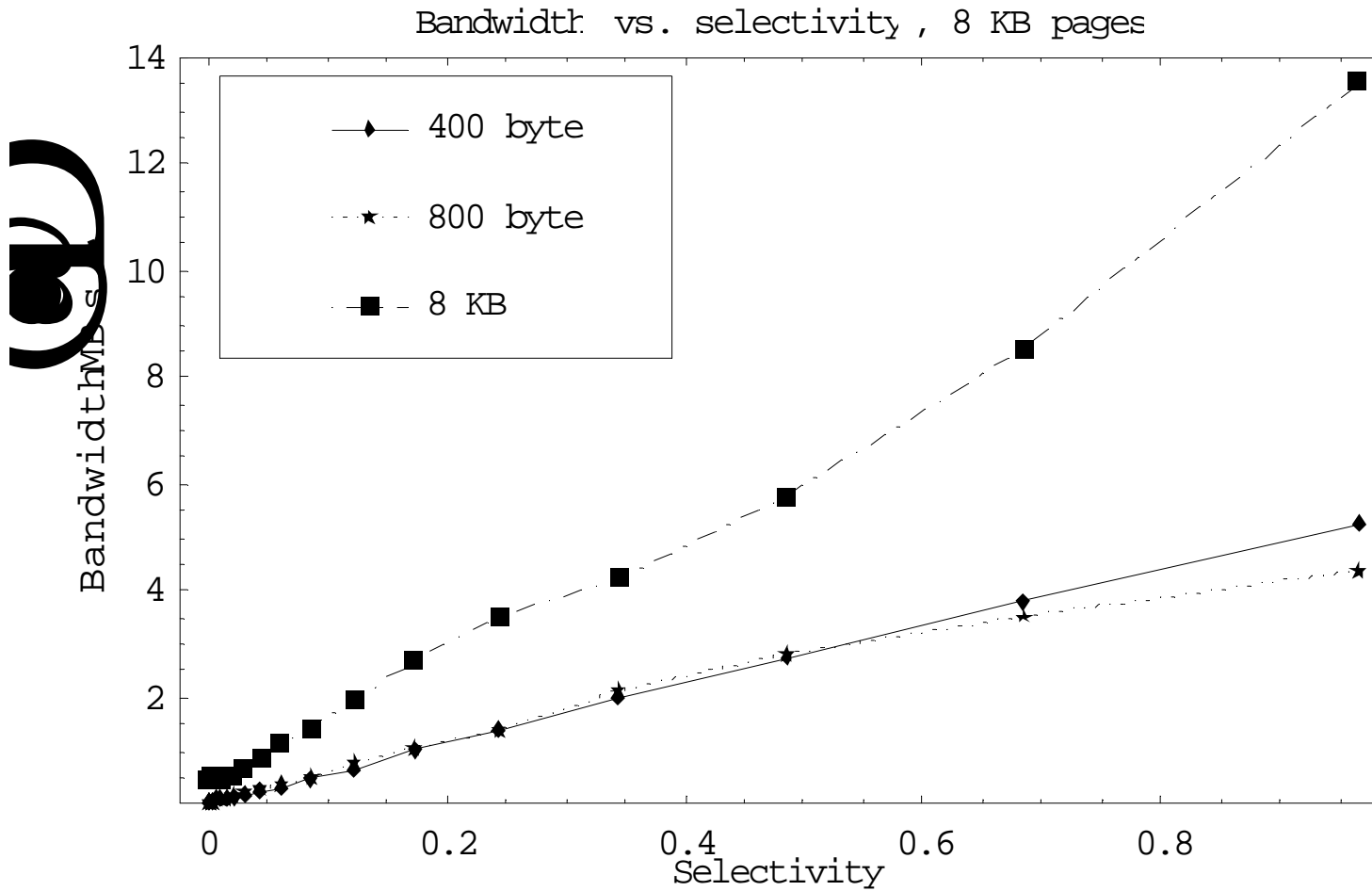
Bandwidth vs. object size, 8 KB pages

1 10 100 1000 10000 100000.



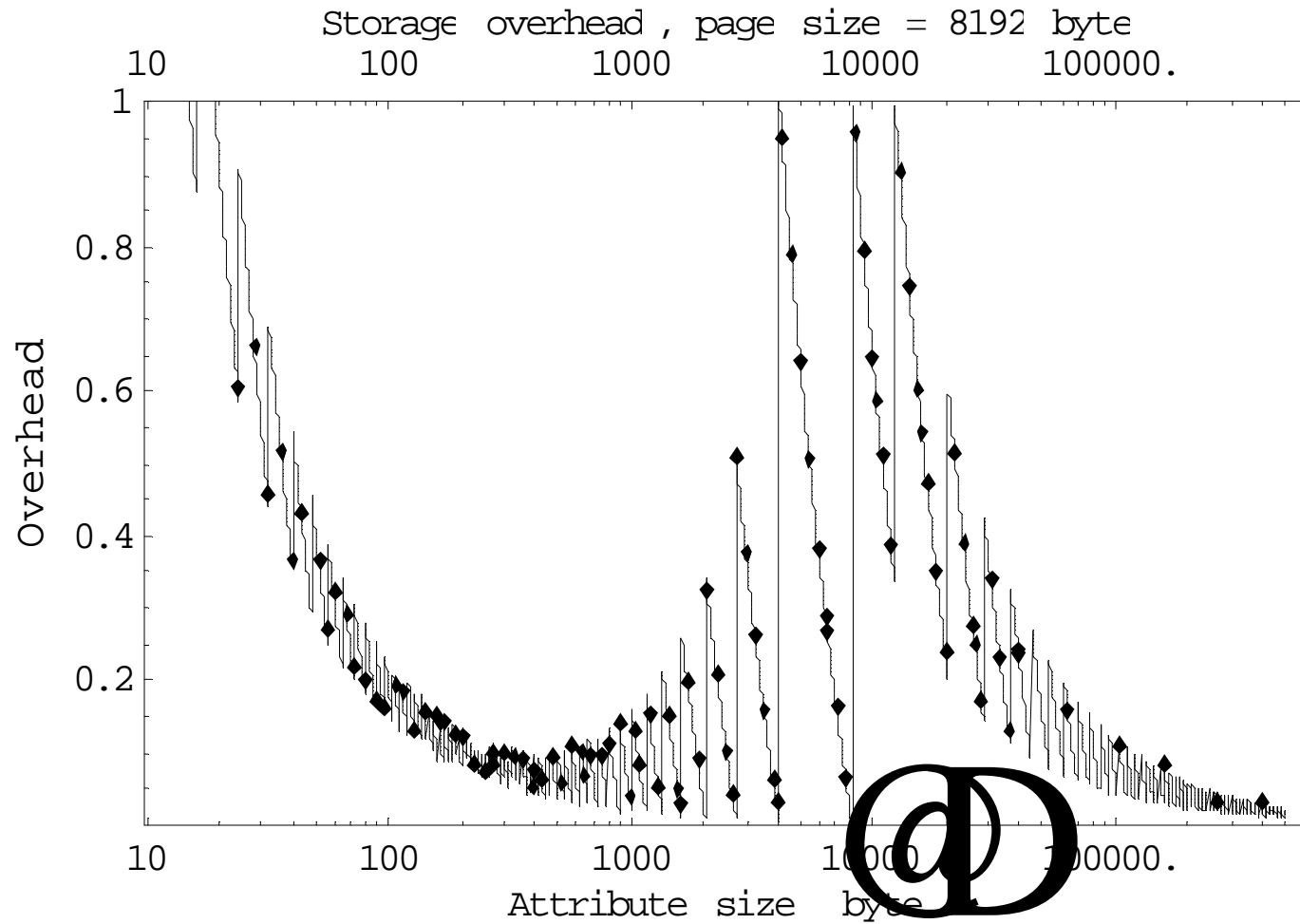


Selective Reading, Solaris





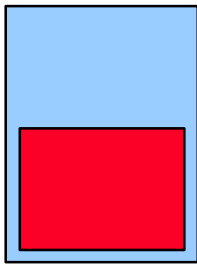
Storage Overhead



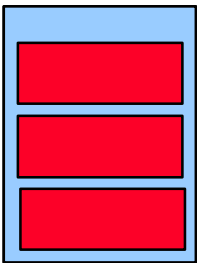


Storage Overhead I

Large storage overhead

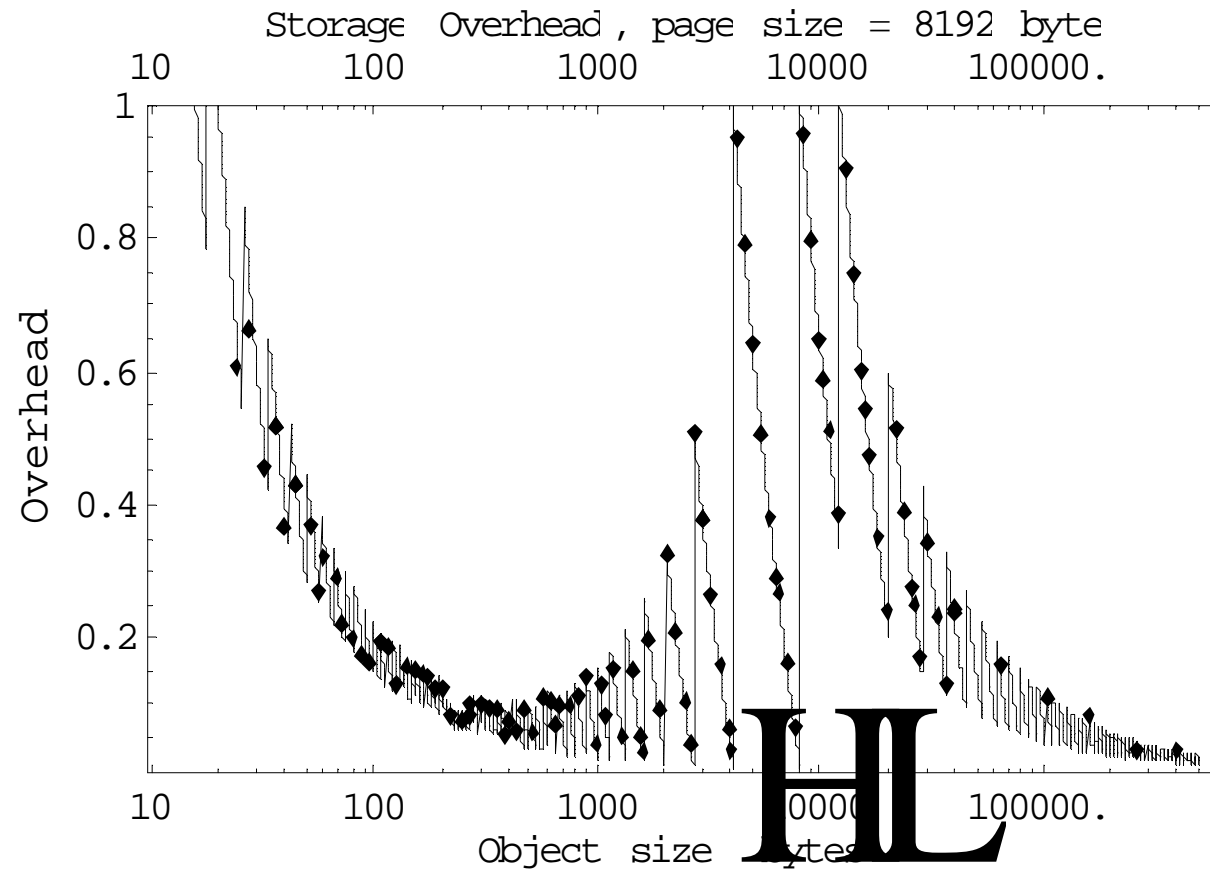


Small storage overhead



$$\text{StorageOverhead} = \frac{\text{DatabaseSize}}{\text{DataStored}} - 1$$

Fixed-size arrays

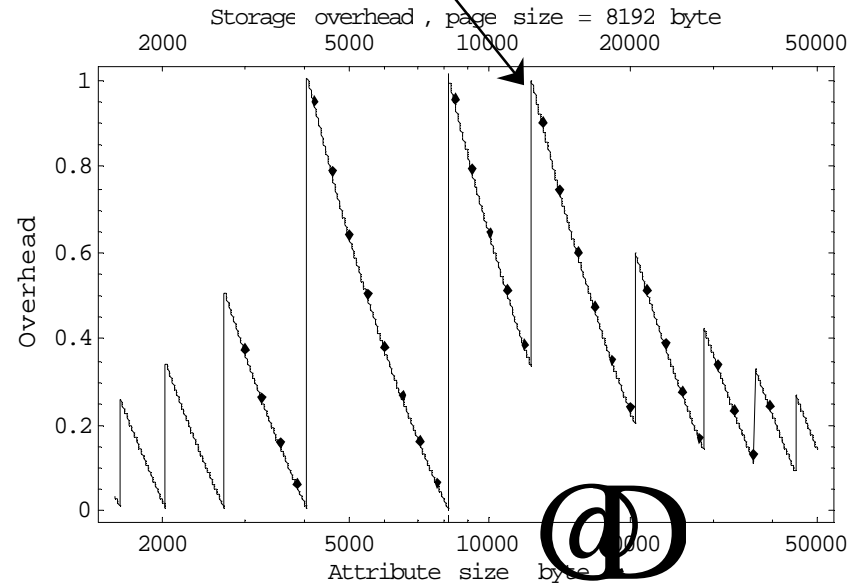
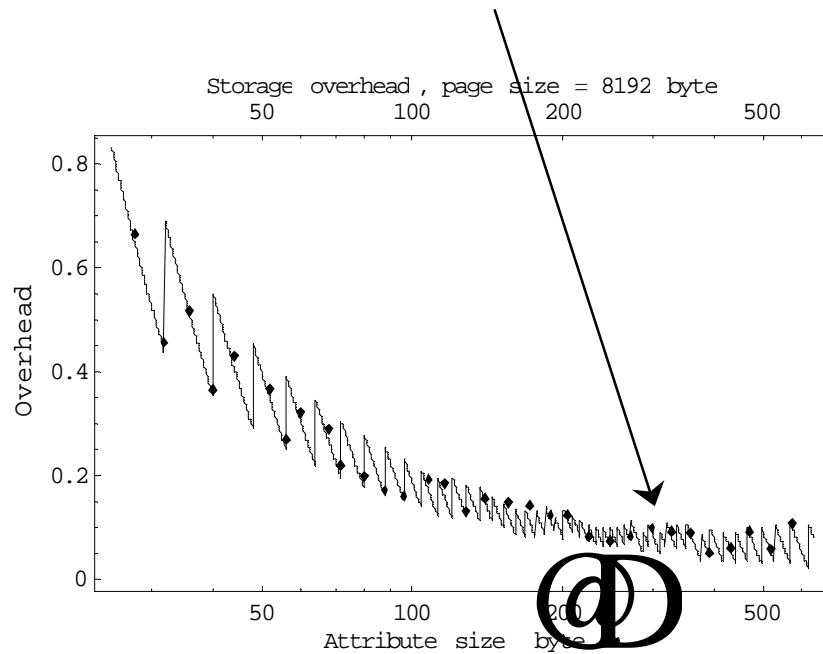




Storage Overhead II

Sweet spot: overhead = 10%

For large objects additional overhead of a half page: 12 k, overhead = 100%, shall disappear in future versions



Overhead for fixed-size arrays, all the same size for different object sizes overhead is less



Storage Overhead III

Small objects:

$object_size \leq page_size :$

$$object_size = \text{ceil}(floor_size / 8) * 8 + 14$$

$$objects_per_page = \text{floor}\left(\frac{page_size}{object_size}\right)$$

$$storage_overhead = \frac{pages_size}{objects_per_page \times attribute_size} - 1$$

Similar for large objects